

# **A REPLACEABLE DEVICE FOR AN ELECTRONIC MONITORING SYSTEM, ESPECIALLY A VIDEO MONITORING SYSTEM**

## **BACKGROUND OF THE INVENTION**

[0001] The invention refers to a replacement device for an electronic monitoring system and especially a replacement device for a video monitoring system. The monitoring system has a removable segment of a casing wall with a connection field having a plurality of individual connections. The removable segment is detachable when the monitoring system fails.

[0002] Monitoring systems, in particular such systems with a plurality of sensors, detectors, or video cameras for monitoring objects, are known in a wide variety of models. In particular, devices are known for such systems that have a plurality of external connections on one side of a casing and thereby preferably on the back of this casing, forming a connection field on which a plurality of external sensors, detectors and/or cameras can be connected. The configuration of the external connections is always freely selectable and generally is based on a desired or defined monitoring program, in which the selected configuration is taken into account.

[0003] Should it become necessary to replace the respective device due to a defect or required maintenance, etc. with another device, then it was, up until now, necessary to disconnect all lines connected to the external connections from these connections and after replacement of the device to reconnect these connections according to the original configuration of the connections. This is not only time-consuming, but can also result in considerable errors.

[0004] The object of the invention is to present a device that prevents these disadvantages.

[0005] To achieve this object, a replaceable device with a connection field is provided.

SUMMARY OF THE INVENTION

[0006] In the device according to the present invention, the external connections of the connection field, which include, at least partly, connections for coax cables, are located on the removable segment, which in turn is connected with the device by means of separable electric multiple connections in the form of multiple plugs and corresponding sockets. Within this segment the external connections are connected permanently with the connections of at least one electric multiple connection element (multiple plug or multiple socket) of the segment, such that by means of this multiple connection element of the segment, a specific permanent allocation of each external connection of the connection field exists with an internal input or output internal to the device.

[0007] When replacing the device, only that segment which is part of the casing wall, for example part of the casing back, is removed from the casing, retaining the connections with the external connections. After replacing the device, the segment is fastened to the new device, whereby by means of the segment-side and device-side multiple connections all external sensors, detectors, cameras, etc. are connected with the correct inputs of the device.

[0008] The segment can be manufactured with a very flat form, so that practically no additional space is needed for this segment.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The invention is described in more detail below based on the drawings using sample embodiments.

[0010] FIGURES 1 - 3 each show a perspective representation of the back of the opened casing of a device for video monitoring, in various states of the segment of the casing back designed as an adapter;

[0011] FIGURE 4 shows a very simplified representation of a catch for the segment of the casing back;

[0012] FIGURE 5 shows a partial representation in perspective view of the opened casing in a view of the inner surface of the casing back in the area of the back wall segment; and

[0013] FIGURES 6 and 7 show a partial representation in perspective view of the front of the casing in the area of a ventilation opening with a hinged screen for changing an air filter, with the screen closed (Figure 6) and the screen open (Figure 7).

DETAILED DESCRIPTION OF THE INVENTION

[0014] In the drawings, 1 refers to a device that is part of an electronic video monitoring system, which has a plurality of monitoring cameras (video cameras) and with which one or more objects can be monitored. The device 1 serves, for example, in the simplest case to convert the video signals provided by the individual cameras in real-time monitoring into digital signals and to save them, for example, in suitable storage media of the device or other, additional devices, or for certain monitoring functions, to compare the current image recorded by a video camera with already existing images from the same camera, etc. Other complex functions are also conceivable for the device 1 and possibly for other devices of the system in connection with this device.

[0015] The functional elements of the device 1 are accommodated in a flat rectangular casing 2, which is similar to the casing of a computer, or PC, and is depicted in Figures 1 - 4 in open condition. For the practical use of the device 1, the casing 2 is closed by means of a casing element made of flat material, for example, of bent sheet steel, as indicated by 3 in Figure 1.

[0016] Figures 1 - 3 show a rear view of the casing 2. On the back 2.1 of the casing 2 there are various connections, in particular a plurality of connections 4 in the form of BNC sockets, to which a video camera can be connected by means of a corresponding BNC connection plug and a coax cable. In the depicted embodiment, the connections 4 form a connection field 5 with a total of twenty-six connections 4, which are individually configured for the corresponding cameras. A special feature of the device 1 consists in the fact that the connections 4 constituting the connection field 5 for the cameras are located on a segment 6 of the back of the casing 2.1, together with additional connections 7 and 8 for multiple plugs or sockets and with a sensor configuration 9, which contains at least one air temperature and/or humidity sensor. The casing segment 6 forms a flat, plate-shaped casing 10, which

in the condition depicted in Figure 1 is accommodated and locked in a recess 11 on the back 2.1 of the casing 2, such that the surface 10.1 of the flat casing 10 accommodating the connection field 5 is in a plane or essentially in a plane with the remaining back 2.1 of the casing and the other surface 10.2 of the flat casing 10 is adjacent to a casing wall 12, which closes the recess 11 toward the inside of the casing 2.

[0017] On the side 10.2 facing away from the connection field 5 there are multiple connection elements (multiple plugs or sockets), which work together with the corresponding connection elements on the casing dividing wall 12. For the sake of simplification, only one such multiple connection element is depicted in the drawings, in the form of a multiple socket 13. Essentially, several such multiple connection elements can be provided for on the casing dividing wall 12, in which case they work together with a corresponding connection element on the back 10.2 of the casing 10.

[0018] Within the casing 10 there is a permanent wiring or electrical connection between the connections 7 and 8 and the multiple connections on the back 10.2 of the casing 10 that work together with the multiple connections 13 on the casing dividing wall, in particular one permanent connection between the connections 4 and these multiple connections on the back 10.2 of the casing, so that inside the device each connection 4 is permanently allocated to a particular connection or input of the multiple connection 13. Also the at least one sensor of the sensor configuration 9 is connected with the electronic circuitry of the device 1 by means of a connection on the back 10.2 of the casing 10 that works together with a multiple connection 13.

[0019] As depicted in Figures 2 and 3, the segment 6 can initially be removed by swiveling (Figure 2) and then lifting (Figure 3) it from the casing 2. For this purpose, the segment 6, rectangular when viewed from the top and the longer sides of which are parallel to the top and bottom of the casing 2 in the recess 11, is provided on one narrow side, i.e. in the depiction in Figures 1 - 3 on the left narrow side furthest from the

multiple connection element 13, on which (narrow side) the connections 7 are primarily located, with two brackets 14 extending beyond this narrow side, each of which engages in an opening 15 of the device for a segment 6 held on the casing 2. On the narrow side opposite the brackets 14 the casing 10 is provided with two openings 16, into which a spring-mounted catch 17 of a locking and unlocking mechanism 18 engages for a segment fastened on the casing back, as represented very schematically in Figure 4.

[0020] The locking and unlocking mechanism 18 has, for example, a push button 19 that is accessible on the outside of the casing back 2.1 and that can be activated against the effect of a pull-back spring 20, for swiveling an ejector 21 such that not only the two catches 17 are unlocked from the corresponding opening 16, but at the same time also swivel arms 22 of the ejector 21 come to bear against the back 10.2, in the vicinity of the narrow side of the casing 10 with the openings 16 and in the direct vicinity above and below the contacts there that work together with the multiple contact 13, so that when the push button 19 is pushed, the segment 6 is unlocked and swivels on an axis parallel to the narrow side with the brackets 14, such that a separation between the multiple contacts 13 and the corresponding multiple contacts on the back 10.2 takes place (Figure 2) and then by pulling out the brackets 14 from the respective holders 15 the complete separation of the segment 6 from the casing 2 is possible.

[0021] This embodiment features the advantage that in the event of a defect in the device 1, this device can be replaced, without disconnecting the connections at the connections 7 and 8, and especially at the connections 4.

[0022] The connections 4 can be configured freely. However, the connections are to be configured accordingly before the initial startup of the system and the configuration is to be taken into account when programming the overall system. Upon disconnection of the electrical connections at the connections 4 when replacing the device 1, it would normally be very time-consuming to restore the connections to the plurality of cameras

in the original configuration. In the depicted embodiment, the device 1 is replaced by an equivalent device in such a way that, retaining all external connections with the connections 4, 7 and 8, the segment 6 is removed from a device and docked onto the new device, so that the configuration of the connections is automatically retained despite replacement of the device.

[0023] The top 3 is fastened in the conventional manner using screws. For this purpose, the fastening brackets 23 on the casing 2 are provided with threads. In order to prevent unauthorized opening of the casing 2 and therefore manipulations within the casing 2, several sabotage switches 24 and 25 are provided for, with at least one sabotage switch 24, which monitors the existence of a fastening screw in the bore hole 23.1 of the fastening bracket 23 by means of a mechanical switch arm 24.1 and sends a signal upon removal of this fastening screw, triggering an acoustic and/or visual alarm at the monitoring system, for example at the central control panel of this system.

[0024] Additional sabotage switches 25 are provided for between the fastening points of the top 3 on the casing 2. These sabotage switches 25 in the depicted embodiment are designed as calipers and bear with one switch element 25.1 against the inner surface of the top 3 in such a way that an alarm signal is likewise produced if the top 3 is removed or lifted.

[0025] Figures 6 and 7 show the front side 2.2 of the casing 2. This front side, on which various displays and other functional elements of the device 1 are located, is made of a molded section 26 of plastic in the depicted embodiment. This front section 26 is provided with a screen 27 with ventilation slots 28, also in the form of a molded section made of plastic. The screen 27 is held onto the front section 26 by means of molded journals 29 and can swivel on an axis parallel to the bottom of the casing 2. Furthermore, the screen 27 is provided with molded catches 30, which lock into counter-catches 31 on the front section 26 when the screen is closed, so that the outer surface of the closed screen 27 forms the continuation of the outer surface of the front section 26.

[0026] Behind the screen 27 the front section 26 forms a ventilation opening 33 with a grid-like structure, such that between this grid-like structure and the closed screen 27 there is space for accommodating a replaceable air filter 33 made of a flat filter material. This design makes it possible to easily replace the air filter 33 if necessary, in particular without opening the device 1 and without removing this device from the overall system.

[0027] The invention was described above based on a sample embodiment. It goes without saying that numerous modifications and variations are possible without abandoning the underlying inventive idea of the invention.



**Reference symbols**

1	Device
2	Casing
2.1	Casing back
2.2	Casing front
3	Casing top
4	Connection for video camera
5	Connection field
6	Casing segment
7, 8	Connection
9	Sensor configuration
10	Casing of segment
10.1	Casing front
10.2	Casing back
11	Recess
12	Casing wall
13	Multiple connection
14	Bracket
15	Opening
16	Opening
17	Catch
18	Locking and unlocking mechanism
19	Push button
20	Spring
21	Ejector
22	Swivel arm
23	Fastening bracket
23.1	Threaded hole
24, 25	Sabotage switch
26	Front section of casing
27	Screen
28	Ventilation opening
29	Swivel pin
30	Catch
31	Counter-catch
32	Ventilation opening with grid structure